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ABSTRACT

This paper addresses the problem of shaping new strategies in the face of current enrollment declines at many colleges and universities. It describes an approach that applies a long term planning model that can incorporate the short-term realities of lower enrollments and budget constraints with projections for new strategic initiatives. The paper notes that too often the immediate budget pressures pushes creative strategic planning aside, therefore, it is necessary to have some sort of linkage in the planning process between long range strategic alternatives and the immediate market demands and budgetary realities. This article describes an approach to linkage that focuses on attaching numbers to strategic ideas. The paper argues that ideas are empty if not grounded in a pragmatic context where enrollment and financial projections can be intermingled with strategic factors to simulate a variety of future scenarios. The planning model presented assists a dean in anticipating the college's future while forcing a disciplined and comprehensive perspective of strategic alternatives. A sample simulation is provided following discussions of the model's construction, usage, and outcomes. (GLR)

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# MAKING STRATEGIC PLANNING WORK WITH NUMBERS: RESPONSES TO ENROLLMENT DECLINE

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August 28, 1992


A B S T R A C T

Despite the tendency to hunker down and "wait it out" during enrollment declines, colleges should use the time for shaping new strategic directions. This is often easier said than done though. The problem is the perceived incompatibility between immediate crisis management and long-term strategic thinking. Too often, the former pre-empts the latter.

The answer may be applying a long term planning model that can incorporate the short-term realities of lower enrollments and budget constraints with projections for new strategic initiatives.

This paper describes such an approach and discusses its application.

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## A CHALLENGE IN STRATEGIC MANAGEMENT

Enrollment declines have now affected many colleges in this country. The result is a greater need than ever before for sound strategic management of colleges and universities. Where as strategic planning might once have been little more than the aspirations of academic leaders to expand and improve their institutions, the need now is for critical decisions involving resource allocation and typically overall contraction in response to changing market conditions.

The management of enrollment decline is a new challenge for academic leaders. Since the second world war, higher education economically has been a caricature of the American economy -- in its rapid growth, its inflationary pricing, and now in its current recessionary state. This recession in higher education will not be short or minor in its impact, but, in all likelihood, occasion major changes for academic institutions in both their strategies and

structure. Accustomed to managing during times of prosperity, academic leaders lack the experience and expertise that this new era requires.

The university, managed as a federation at best, is not well-equipped to manage its restructuring. The need for retrenchment must compete with the reality of entrenchment. Strategic planning is not merely an exercise in vision or institutional aspirations, but becomes a difficult, exacting, and self-critical inquiry into an institution's future. The interrelationship of factors becomes key as academic leaders determine the appropriate mix of pursuits for the future.

A reactive approach to strategic management would be simply to make percentage cuts across the board in response to shrinking enrollments. As the number of students decreases, reduce faculty, staff and expenses accordingly. This approach might suit those institutions that opt simply to "hunker down and wait out the storm" until the demographics brings clear skies again.

However, the "wait out the storm" strategy is risky. It assumes that the college's existing strategy and structure are basically sound, and that contraction alone will assure survival. Likewise it assumes that the current strategy and structure will be appropriate for the market when again we

experience an expansion of the student base. But can we really expect that the new market of higher education and the competitive forces will be the same as before?

What now makes more sense is a "proactive" strategic management approach. Rather than hunkering down during this period of declining numbers, we can use the time to be visionary -- take stock of the market, the industry of higher education, the competitive environment, and the college itself -- and reposition accordingly. This will first require some projection of possible future market scenarios. It will mean understanding emerging new competitive forces. For example, will two-year colleges forward integrate by adding four-year programs? Are we likely to see for-profit institutions of higher learning?

A proactive approach means also that rather than flat across-the-board cuts, there would be selective reinvestment in some programs as well as contraction so long as the latter exceeds the former. There will be tradeoffs to consider. Less investment in faculty research can give quick relief to the budget picture while it exacerbates the need to reduce faculty beyond normal attrition rates -- less research requires fewer faculty, all else remaining equal. Larger classes will require fewer faculty but could tarnish the institutions image.

Although net enrollments in many colleges are down generally, there are still certain fields that are growing. In business education, for example, there is an increase in the number of foreign students getting business degrees in this country. Similarly American business students are demanding more international business offerings in both undergraduate and graduate MBA offerings. Also, while undergraduate enrollments are down in business administration, graduate demand has not been so adversely affected. Non-degree management education may actually expand as we pull out of the economic recession.

Therefore, a strategy of waiting it out with flat percentage cuts across the board is hard to justify other than for the fact that it is a straightforward expedient approach.

## LINKING STRATEGY WITH NUMBERS

During a period of enrollment decline and budgetary constraints, there is the expected focus on dollars and head counts. Strategic alternatives not tied to the numbers are difficult to assess. Generalizing about contracting one program and giving strategic priority to another means little if there is no sense of the impact on revenue, expenses and head counts, not only just this year and the next but for the foreseeable future.

The first painful lesson in the management of decline in universities is that disciplines, colleges, and universities do not possess a pre-ordained size or legitimacy apart from the financial support they receive: they must justify their existence in the harsh reality of their environment.

Too often such immediate budget pressures pushes creative strategic planning aside. This is understandable. Strategic planning typically deals with mission statements and broad goals and objectives. Too often such planning encourages unrealistic "desires and hopes" that bear little resemblance to hard enrollment figures and budget dollars.

This is not just a phenomenon in universities but a problem in corporate strategic planning as well. Too often strategic planning is put on the back-burner until a business or enrollment crisis is past because planning seems too long term and not responsive to immediate challenges. This in fact is a major reason why strategic planning, despite its appeal, is not as effective in practice as it could be.

The issue here is one of how much linkage there should be between long range strategic alternatives and more immediate market demand and budget realities. One school of thought is that current budget constraints limit the imaginative

thinking so essential to strategic thinking. The fear is peripheral vision and straight-line thinking. Another view is that strategic planning, not linked to current "numbers," runs the risk of being an esoteric exercise with little credibility.

Our experience suggests that creative planning and immediate enrollment and budget realities can be linked in a way that will make strategic planning effective and credible and not something pushed to the back burner in times of crisis.

This article describe such an approach. It is one that assists a dean anticipate the college's future while forcing a disciplined and comprehensive perspective of strategic alternatives. It focuses on attaching numbers to ideas. Although quantification is not meant to be a substitute for vision, ideas are empty if not grounded in a pragmatic context. This model suggests such a context -- where enrollment and financial projections can be intermingled with strategic factors to simulate a variety of future scenarios.

## A PLANNING MODEL

This model encompasses three categories of variables -- predictive and policy factors combine to produce outcomes.

Predictive factors include those variables that are largely beyond the direct control of a college: for example, its enrollments, financial support, student retention, expected faculty attrition through resignations, retirements and tenure decisions, and so forth. Policy factors are more directly within the control of a college, such as in determining faculty workload, class size, curricular changes, new faculty hires if any, use of part-time faculty, extent of extra-compensation for teaching overloads, and so forth. Third, the strategic thinker needs to determine which outcomes are sought. Outcomes include the number of faculty required, revenue, expenses, and financial contribution.

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INSERT FIGURE 1 HERE

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Policy and predictive inputs are entered in yearly increments over the projection time period and outcomes are produced on an annual basis as well.

Simulations can be generated ad nauseam, but inputs and outputs must be continually balanced to see what set of assumptions on the key variables will generate the set of outcomes most desired and valued. This model can provide the basis for not only anticipating a college's future, but assist a dean in negotiating changes and contributing ideas to the overall management of the university at large.

Predictive Factors:

The sine qua non of strategic planning is determining future demand for major programs, e.g. undergraduate, graduate, and non-degree programs. Using local, regional, and national trends, enrollment forecasts rely on the ability to anticipate future consumer interest. Demography is only one of several factors. In the last decade for instance, demographic decline was more that offset by a higher enrollment rate throughout the nation, particularly among older "baby boom" students. Likewise, shifts in consumer interest can dramatically affect the proportion of students within a particular discipline. Business, for example, has seen its market share of undergraduates drop precipitously in the past few years, as other fields (particularly those in health care) rose in popularity. Demographic projections, shifts in student interest, and trends in college going, and the ongoing competitive appeal of the institution must be folded together.

Projections should be made for at least the next five years. The normal undergraduate pipeline of 4 - 5 years introduces a projection base for that length of time. An overly short time horizon precludes simulating the implications of possible demographic and market trends sufficiently in advance to chart strategic responses. On the other hand, excessively lengthy forecasts can become highly uncertain in the most distant years. A ten-year projection, for example, will decline in credibility and utility in its forecasts of the latter years but may be quite accurate for the initial five years.

Once each student cohort is projected, a planning model must incorporate the vicissitudes that students experience during their academic careers. We term this the "retention/build-up ratio" (RBU). By comparing the size of a cohort through each year of its progress, one can examine whether those students lost to attrition are adequately replaced by students transferring into the unit. The RBU is the ratio of, say, sophomores to its previous size as a freshman class and reflects the aggregated effect of students lost and gained from one year to the next. An RBU of less than one suggests net loss occurred; greater than one shows that for a variety of reasons perhaps the cohort has grown. Some disciplines, particularly in the pure and applied sciences, traditionally lose students; while others, such as business,

are the "default" fields that often graduate even more students than admitted initially. A rolling, weighted RBU rate can be determined for each year within each program and discipline to project year-to-year cohort size.

A final predictive variable is the average student's course load in that discipline for each year of the program. For example, on average how many courses in, say, nursing does a freshmen take, a sophomore, etc.? These averages are de facto, not de jure, since students typically deviate from the prescribed curriculum. Failed courses, extra electives in the field, and problems encountered in transferring often increase the number of courses a student takes beyond the normal expectations. Delaying required courses and waivers of requirements can decrease expected enrollments. Because a small discrepancy between the theoretical and actual number of courses can have a major impact on manpower needs, it is necessary to look at actual patterns of enrollment that have occurred.

To the extent that colleges within a university often share students, their fates are interdependent. Thus, enrollment forecasting involves projecting the ability to attract and serve other students in the university beyond the majors in that unit. This service function depends on both market factors in other disciplines and academic policies that

encourage or discourage enrollments from those outside an unit.

Policy Variables:

Several variables reflect decisions more than predictions. Enrollment cannot be projected irrespective of price: the strategic planner should anticipate tuition increases and financial aid support to determine the de facto price that can attract an anticipated number of students, and to determine the net revenue a unit can foresee.

A second set of policy decisions also impact the ability and desire of the institution to attract students: the product mix of academic programs, thresholds that prescribe the level of student quality desired, and curricular issues that might dictate changes in course offerings. For example, some courses or requirements might remain "protected" regardless of class size because of their integral role in the educational philosophy of the area. This could lower the mean class size. On the other hand, some requirements, majors, and programs might be vulnerable as enrollments decline beyond certain minima.

New initiatives might be introduced into this model to project their impact on resources as well. The unit might

also design new options for non-majors or lower the barriers to entry into existing courses -- which might increase the "service" function of the area. All of these strategic choices can be simulated to assess their costs and benefits.

A third set of policy variables concerns the quality of faculty life. What are the expectations for faculty "productivity" in the future -- that is, what will be the average teaching load, the availability of internally and externally supported release time, sabbatical and leave policies, and the optimal section size from a pedagogical perspective? What will be the opportunities for faculty compensation for teaching beyond the normal base teaching load, and how will the opportunities for additional income compete with the desire perhaps to protect existing faculty positions? What is the anticipated mix of faculty -- between tenure-track, part-time and other adjunct faculty -- particularly as it impacts the full-time faculty coverage of courses?

There can be an overlap between predictive and policy variables. Student retention rates (a predictive factor) might well be influenced, for example, by class size (a policy decision). Faculty salaries (a policy decision) could be tied to faculty attrition (a predictive variable). Beyond relying on intuitive judgment, the interplay of factors can reveal key issues that need to be analyzed systematically.

Outcomes:

The output of this strategic model can be multiple, depending on the complexity of the predictive and strategic factors. Once revenue and expenses are projected, financial contribution can be anticipated on an annual basis. Once enrollments are meshed with faculty teaching issues, the manpower needs can also be projected. The different variables are obviously interdependent, providing an enormous range of possible scenarios that can be tested. However, the strategic manager needs to focus on those issues that are most sensitive to negotiation and variability.

For example, the model enables one to vary assumptions on new freshman enrollments, attrition, graduate enrollments, class size, use of part-time faculty, policy on faculty overloads, summer teaching, faculty research, and other variables in order to assess their collective impact upon how many faculty will be required for the each year from 1992 to 2000 as well as the yearly financial contribution generated by the college. The validity of the model can be tested by applying it retroactively as well -- imputing past years' data and contrasting the outcomes with reality.

This model will never be conclusive in an absolute sense, but always iterative and subject to debate and refinement. Likewise, this model cannot replace a difficult, soul-searching review of what matters most, but it can complement such a review by simulating the consequences of strategic decisions.

## A SAMPLE SIMULATION

Figure 2 shows an extract from a simulation of the model for a hypothetical college -- in this case a business school. The Lotus 123 (Reg. Trademark) print-out includes about 50 lines from the model which in its entirety consists of over 400 lines. In the sample, seven years of history (1985-86 through 1991-92) are provided along with the projection for the next nine years (1992-93 and after). This format facilitates a historical perspective for the user in evaluating future possible trends.

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INSERT FIGURE 2 ABOUT HERE

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The sample print-out reveals a college that is weathering a downturn in undergraduate enrollments, and evaluating the possible offsetting impacts of growth in the graduate programs. Line entries 9-38 are predictive inputs that will be determined by external market factors and the college's ability to recruit students. Lines 41-46 are examples of policy inputs as decided by the college. Finally, lines 49-55 are the outcomes of the predictive and policy variables. The number of faculty required in this simulation (Line 49) reaches a high of 125 in 1990 and then drops off despite the growth in graduate admissions. The financial impacts can be seen in Lines 52-55 showing revenue expense and contribution (revenue less expense).

If the dean of this hypothetical college wanted to see the impact of dwindling undergraduate enrollment <u>without</u> growth in the graduate programs, the predictive entries in Lines 18-35 could be modified accordingly for future years and a different set of outcomes (Lines 49-55) would be readily generated in minutes.

The convenience of the model allows alternative strategic directions for a college, including a re-ordering of program priorities, phase-outs, start-ups, and policy changes to be expressed more definitively than through general qualitative statements. While in practice it may be difficult for those

involved in the planning process to agree on the exact numbers for a new strategic direction, running several reasonable simulations can produce a sensitivity analysis to reveal those predictive variables that exhibit the greatest leverage for influencing outcomes.

## USEFULNESS OF MODEL

A planning model such a described above will be useful by (a) assisting academic leaders in thinking about key variables and their interrelationships for planning ahead, (b) eventually helping to reach a consensus on how to proceed and (c) justifying strategic decisions to others. It will not replace a good grasp of the facts and sound judgment, but it can leverage these qualities.

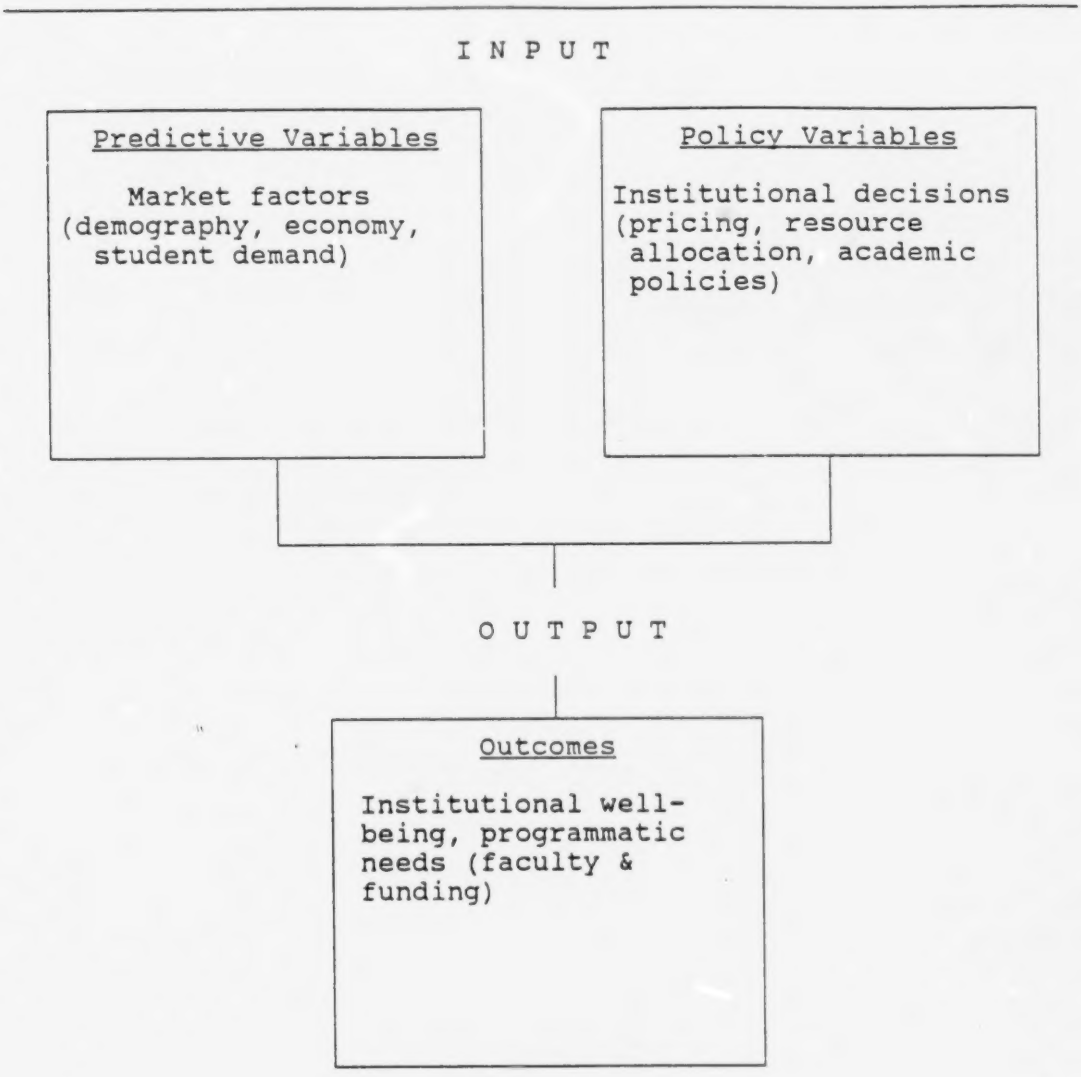
The usefulness of the model lies not in just capturing the key variables and their interdependencies, but in making it user-friendly for running various simulations. Each simulation shows how a combination of predictive and policy variables impacts the outcomes. The model is easily structured in Lotus 123 (trademark) or another spreadsheet program and can be simulated quickly on a PC by anyone who has the program file on either a floppy or hard disk. The internal assumptions for each run (predictive and policy variables) can be made explicit to the user.

An array of market factors inevitably interact with evolving institutional policies. While institutions may not control their own destiny, they are not helpless in understanding and influencing their fate. Even though forecasts of future student markets are always suspect, this model provides a basis for dissecting and debating demographic, economic, and consumer issues - and then translating predictions into patterns of student enrollment. Likewise, institutional policies can be analyzed systematically by their impact on both student demand and institutional well-being.

Ideally, this model can be modified to reflect the realities and strategic issues of particular colleges. But this tool will never produce single, simple "bottom line" prophesy - nor replace the necessity of exercising judgment in a context of uncertainty and turmoil.

Figure 1

STRUCTURE OF PLANNING MODEL


I N P U T
Predictive Variables
Market factors (demography, economy, student demand)
Policy Variables
Institutional decisions (pricing, resource allocation, academic policies)
O U T P U T
Outcomes
Institutional well-being, programmatic needs (faculty & funding)

## Figure 2

## SAMPLE SIMULATION OF MODEL FOR A HYPOTHETICAL COLLEGE

HYPOTHETICAL SIMULATION OF COLLEGE PLANNING MODEL (for a business school)

Actuals through 1991-92. Projections for 1992-93 and after.

| Fiscal Year | 1985 -86 | 1986 -87 | 1987 -88 | 1988 -89 | 1989 -90 | 1990 -91 | 1991 -92 | 1992 -93 | 1993 -94 | 1994 -95 | 1995 -96 | 1996 -97 | 1997 -98 | 1998 -99 | 1999 -00 | 2000 -01 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| UNDERGRAD | | | | | | | | | | | | | | | | |
| Senior | 266 | 282 | 285 | 285 | 289 | 280 | 270 | 269 | 248 | 238 | 223 | 210 | 200 | 210 | 210 | 217 |
| Junior | 300 | 320 | 332 | 340 | 335 | 328 | 319 | 295 | 286 | 268 | 251 | 239 | 252 | 251 | 259 | 272 |
| Soph | 360 | 361 | 382 | 370 | 375 | 350 | 330 | 319 | 299 | 279 | 266 | 281 | 280 | 289 | 303 | 316 |
| Fresh | 377 | 385 | 400 | 405 | 390 | 370 | 350 | 330 | 310 | 295 | 310 | 310 | 320 | 335 | 350 | 370 |
| TOTAL UG | 1303 | 1348 | 1399 | 1400 | 1389 | 1328 | 1269 | 1213 | 1142 | 1080 | 1051 | 1040 | 1051 | 1086 | 1122 | 1175 |
| New Freshman | 348 | 352 | 375 | 385 | 374 | 350 | 330 | 310 | 290 | 275 | 290 | 290 | 300 | 315 | 330 | 350 |
| GRADUATE PROGRAMS | | | | | | | | | | | | | | | | |
| GRAD ADMITS (Number of new students admitted for the whole year) | | | | | | | | | | | | | | | | |
| Full-time | 110 | 120 | 122 | 135 | 144 | 150 | 160 | 160 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 |
| Part-time | 27 | 25 | 25 | 30 | 34 | 35 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| HealthCare MBA | 18 | 15 | 22 | 27 | 27 | 28 | 27 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Intl MBA | 57 | 62 | 62 | 59 | 60 | 55 | 48 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| Overseas MBA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 30 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| Finance MS | 35 | 32 | 35 | 23 | 39 | 37 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| Acctg MS | 56 | 66 | 75 | 80 | 78 | 85 | 80 | 80 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| MBA/Law | 0 | 21 | 25 | 26 | 22 | 22 | 24 | 24 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| MBA/Lib Arts | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| GRAD FT Enroll | 903 | 870 | 891 | 814 | 781 | 779 | 739 | 675 | 675 | 709 | 709 | 709 | 709 | 709 | 709 | 709 |
| NUMBER OF ENTERING GRAD SECTIONS | | | | | | | | | | | | | | | | |
| Full-time | 3 | 3 | 3 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Part-time | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| HealthCare MBA | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Intl MBA | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Overseas MBA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Finance MS | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Acctg MS | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| MBA/Law | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| MBA/Lib Arts | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| GENERAL - Full-time Coverage and On-Load Teaching Assumptions | | | | | | | | | | | | | | | | |
| UG FT Fac Cov % | 75% | 78% | 81% | 80% | 80% | 83% | 82% | 85% | 85% | 95% | 85% | 85% | 85% | 85% | 85% | 85% |
| MBA Fac FT Cov | 87% | 83% | 80% | 79% | 82% | 81% | 90% | 80% | 80% | 80% | 80% | 80% | 90% | 80% | 80% | 80% |
| MS FT Fac Cov % | 66% | 64% | 68% | 66% | 72% | 72% | 72% | 72% | 72% | 72% | 72% | 72% | 72% | 72% | 72% | 72% |
| On-load UG % | 100% | 100% | 100% | 100% | 97% | 95% | 95% | 95% | 95% | 95% | 95% | 95% | 95% | 95% | 95% | 95% |
| On-load MBA % | 10% | 10% | 100% | 100% | 100% | 90% | 92% | 93% | 90% | 90% | 90% | 90% | 90% | 90% | 90% | 90% |
| On-load MS % | 50% | 30% | 42% | 39% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |
| FACULTY REQUIRED | 76 | 82 | 88 | 98 | 112 | 125 | 115 | 111 | 109 | 107 | 107 | 107 | 107 | 107 | 108 | 109 |
| UNDERGRAD/GRAD % | | 42% | 40% | 41% | 38% | 38% | 37% | 34% | 33% | 32% | 31% | 31% | 30% | 30% | 30% | 31% |
| UNDERGRAD REV % | | 55% | 55% | 54% | 54% | 53% | 51% | 51% | 49% | 46% | 45% | 44% | 44% | 44% | 45% | 46% |
| TOT REVENUE | | 17.2 | 19.3 | 21.2 | 22.4 | 24.8 | 24.4 | 23.8 | 22.8 | 22.7 | 23.6 | 23.6 | 23.8 | 24.0 | 24.3 | 24.6 |
| TOT EXPENSE | | 8.5 | 9.2 | 11.4 | 13.7 | 15.7 | 15.3 | 14.3 | 14.5 | 14.3 | 14.2 | 14.2 | 14.2 | 14.3 | 14.4 | 14.5 |
| CONTRIBUTION | | 8.7 | 10.0 | 9.8 | 8.8 | 9.1 | 9.1 | 9.1 | 9.3 | 9.4 | 9.4 | 9.4 | 9.6 | 9.7 | 9.9 | 10.1 |
| CONTRIBUTION % | | 50% | 52% | 46% | 39% | 37% | 37% | 38% | 39% | 40% | 40% | 40% | 40% | 41% | 41% | 41% |



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